Applicants

L4 ANSWER 4 OF 233 CA COPYRIGHT 2003 ACS on STN
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TI High-defect stabilized oxides for thermal-barrier **coatings** resistant to sintering in high-temperature service on turbine-alloy parts
IN Subramanian, Ramesh
PA Siemens Westinghouse Power Corporation, USA
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	US 2003108768	A1	20030612	US 2001-10676	20011206
PRAI	US 2001-10676	A	20011206		

AB The oxide thermal-barrier **coating** having highly defective **cubic** matrix structure includes a high addn. of a stabilizer to promote the resulting O-vacancy interaction within the oxide matrix to form multiple vacancies, thereby improving the oxide resistance to sintering in high-temp. service. The ZrO2 as thermal-barrier **coating** is preferably stabilized with the high Y2O3 concn. .gtoreq.30% by wt., exceeding the .apprx.25% stabilizer value necessary to give the peak ionic cond. in the oxide matrix. The principle is similar for the **cubic**-oxide thermal-barrier **coatings** based on HfO2 or TiO2, when stabilized with .gtoreq.30% of La2O3, Yb2O3, or Y2O3. The ZrO2 ceramic **coating** stabilized with 50% Y2O3 shows linear shrinkage of <4000 ppm after 24 h at 1400.degree., vs. 4 times higher for conventional ZrO2 stabilized with 8% of Y2O3. The **cubic** HfO2 is optionally stabilized with 30-50% by wt. of Gd2O3.

ST turbine alloy thermal barrier oxide **coating** vacancy defect; **zirconia** stabilized ceramic sintering prevention thermal barrier turbine **coating**

IT Oxides (inorganic), uses

cite of interest
↳ 25% needed to give peak ionic condition in oxide matrix ....